

Species Diversity, 2004, 9, 125–133

Two New Pycnogonids (Arthropoda: Pycnogonida) from Atlantic Equatorial Africa

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(Received 22 July 2003; Accepted 19 January 2004)

Two new species of pycnogonid are described from shallow sublittoral waters (27 to 63 m depth) off the coast of equatorial Africa. *Bango polyonyx* gen. et sp. nov., tentatively placed in the Callipallenidae, is unique in having a compound main claw on all legs, as well as setose tubercles on the first and second coxae and the femur; the ovigerous leg of the female is of nine articles; the chelae are atrophied; and the palps are mere buds. *Anoplodactylus amoybius* sp. nov., of the Phoxichilidiidae, is a sibling species to *A. erectus* Cole, 1904 from the Indo-Pacific, from which it differs by the placement of the cement gland tube on the femur of all legs and the presence of a dorsodistal tubercle on the first coxae of the last three pairs of legs.

Key Words: Pycnogonida, Atlantic, Equatorial Africa, *Anoplodactylus*, *Bango*.

Introduction

The pycnogonids of Atlantic equatorial Africa are not well studied. Records have been largely incidental from cruises that more predominantly surveyed northwestern Africa (Gordon 1932; Fage 1942, 1959; Stock 1951, 1966), some not reaching as far south as Cameroon (e.g., Giltay 1937). These studies recorded *Nymphon angolense* Gordon, 1932 and *Tanystylum orbiculare* Wilson, 1878 off Angola, and, along with the one specific study of Fage (1949, *q.v.*), seven species from waters off the Congo. Loman (1923) also recorded “*Nymphon gracillimum* Calman, 1915” (= *N. hiemale* Hodgson, 1907) off Angola, although this is an Antarctic species (e.g., Child 1995). Species occurring below 200 m depth in the north-east Atlantic north of the Equator are listed in Bamber and Thurston (1995).

During box-core surveys of an area off Gabon and Equatorial Guinea, two species of pycnogonid were collected that proved to be hitherto unknown to science. A new species of *Anoplodactylus*, represented by one male and four females, is very similar to the Indo-Pacific species *A. erectus* Cole, 1904, and may be regarded as a sibling species of the latter. The second species, represented only by a gravid female, is sufficiently unlike any described pycnogonid to be ascribed to a new genus. This material is described herein.

Terminology of the cuticular ornamentation herein follows the traditional use of “spines” for relatively inflexible, thorn-like structures, “setae” for flexible, bristle- or hair-like structures, and “apophyses” for non-articulating cuticular outgrowths (i.e. “spines” *sensu* Watling 1989), in keeping with their etymology. All

measurements were made axially (see Fry and Hedgpeth 1969), using a curtain micrometer eyepiece. The material is lodged at The Natural History Museum, London (NHM).

Systematics

Family **Callipallenidae** Hilton, 1942

Genus ***Bango*** gen. nov.

Diagnosis. Small species, trunk compact without segmentation, ocular tubercle present, chelifora single-articled, elongate, chelae atrophied in adult; palps reduced to single-articled buds; oviger of nine articles present in female, strigilis with simple spines; legs with setose lateral tubercles, tarsus short, main claw compound, auxiliary claws present.

Etymology. *Bango* is an anagram of Gabon (gender masculine).

Bango polyonyx sp. nov.

(Figs 1, 2)

Material. Holotype (Registration No. NHM 2003.629): gravid female, 01°59'S 09°09'E, 45 m depth, sandy sediment (89% sand, 11% silt-clay).

Description. *Female.* Trunk (Fig. 1A, B) small, compact, almost circular in outline defined by tips of lateral processes, unsegmented, glabrous. Lateral processes longer than trunk width, radiating from trunk, each with small, lumpy dorsodistal tubercle. Ocular tubercle at anterior edge of cephalon, twice as tall as wide, distally stepped, without eyes. Abdomen not articulating with trunk, curving upwards, with four distal spines. Proboscis cylindrical, 0.6 times length of trunk, held ventrally, shape type A':1 of Fry and Hedgpeth (1969).

Chelifora (Fig. 1A, B) elongate, scape one-articled, widest distally, each with two midlateral setae and one dorsodistal spine. Chela atrophied, relic of moveable finger small stub, with single outer spine.

Palp reduced to small bud of one article placed ventrolaterally on anterior margin of cephalon.

Oviger (Fig. 1C) of nine articles; second article (O2) longest, O1, O3, and O4 subequal, about half length of O2; these four articles naked. Distal five articles all shorter than O4, forming strigilis; O5 and O6 each with single simple spine, O7 with three and O8 with two simple spines; O9 with pair of short, curved distal spines each bearing one seta.

Third leg (Fig. 2) with first coxa twice as long as wide, with finely setose dorsal and ventral margins, and with raised midlateral tubercles on anterior and posterior faces, these tubercles with fine marginal setae dorsally and ventrally and row of curved setae with rounded distal knobs, reminiscent of trochanters on a vertebrate femur (Fig. 2B, detail). Second coxa 1.3 times as long as first, with paired distolateral and ventral marginal setae, two larger and two smaller ventrodistal spines adjacent to gonopore, and with middorsal hump above setose midlateral tubercles, latter as on first coxa. Gonopore present on second coxa of all legs. Third

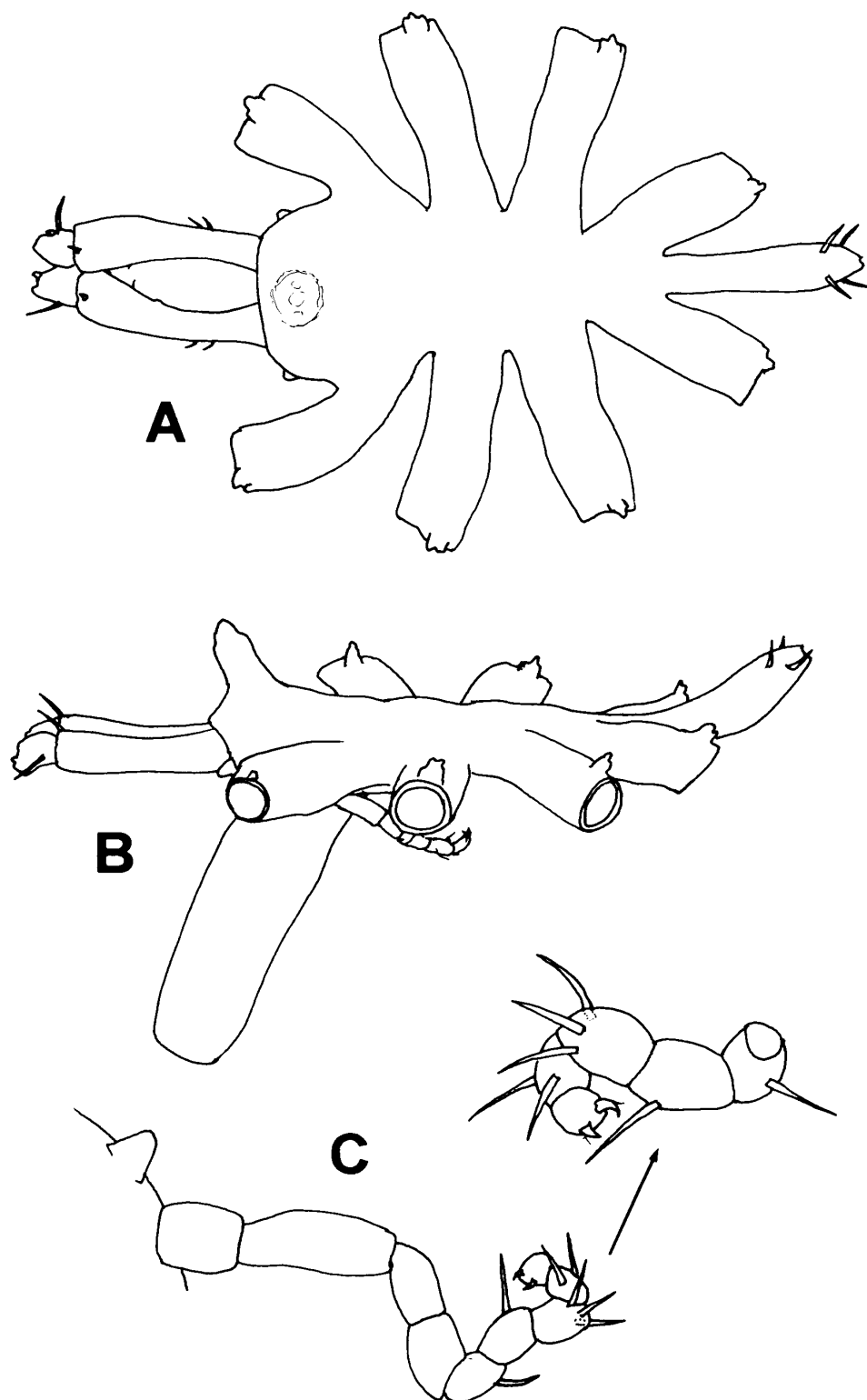


Fig. 1. *Bango polyonyx* gen. et sp. nov., holotype female. A, dorsal view of body; B, lateral view of body; C, left oviger and palp, ventral, with detail of oviger strigilis. Scale line=0.3 mm for A and B, 0.15 mm for C.

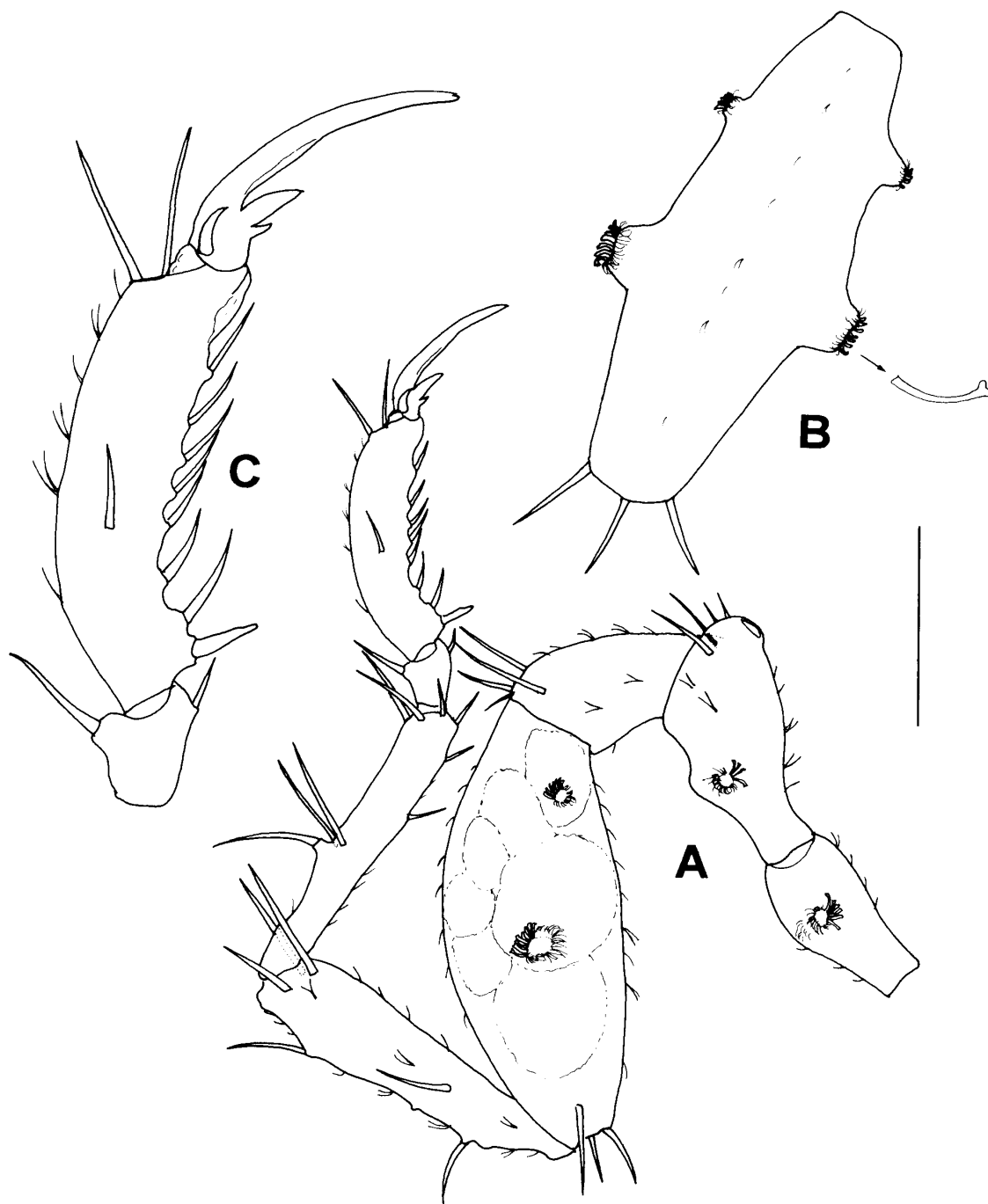


Fig. 2. *Bango polyonyx* gen. et sp. nov., holotype female. A, third right leg, posterior view; B, dorsal aspect of femur, with detail of club-like seta; C, detail of tarsus, propodus, and claws. Scale line=0.2 mm for A and B, 0.1 mm for C.

coxa shorter than first, with paired lateral and ventral fine setae, three ventrodistal spines, and no lateral tubercles. Femur (Fig. 2A, B) longest of leg articles, swollen, containing about 10 eggs, with dorsal and ventral paired, fine marginal setae, three dorsodistal spines, and with raised midlateral and proximolateral tubercles similar to those on first coxa. First tibia more slender than femur, with

dorsal, lateral, and distal spines and paired fine marginal setae as figured (Fig. 2A); second tibia as long as first tibia, less setose, with group of three middorsal spines. Tarsus small, triangular, with dorsal and ventral distal spines; propodus (Fig. 2A, C) slender, curved, with stout heel spine distally “stepped”, seven curved sole spines, and no lamina. Main claw more than half as long as propodus, slender, curved, its cutting edge thinner proximally, and with two extra ventroproximal processes giving compound denticulation; auxiliary claws small, lateral, one-seventh length of main claw.

Male. Unknown.

Measurements (mm). Holotype: Trunk length (anterior of cephalon to tip of fourth lateral process) 0.78, width across second lateral processes 0.84; proboscis length 0.47; abdomen length 0.3; chelifore length 0.28; third leg lengths—first coxa 0.16, second coxa 0.22, third coxa 0.13, femur 0.43, first tibia 0.29, second tibia 0.31, tarsus 0.06, propodus 0.24, main claw 0.15, auxiliary claw 0.02.

Etymology. From the Greek “poly” (many) and “onyx” (a talon or claw), in reference to the unique compound main claw of this species.

Remarks. The attribution of *Bango polyonyx* sp. nov. to the Callipallenidae is to an extent by default. Both sexes of the genera currently ascribed to this family have ten articles in the ovigers (Child 1982), not nine as here. The structure of the oviger is similar to that found in the ammotheid genus *Tanystylum*, and the atrophied chela and the gross structure of the legs are reminiscent of those of a number of ammotheid genera. A bud-like palp has only been recorded previously in callipallenids and phoxichilidiids, although the latter have no oviger in the female. While the compound main claw is a unique feature, two species of *Callipallene* (*C. tridens* Nakamura and Child, 1988 and *C. ersei* Bamber, 1997) do have compound auxiliary claws (Bamber 1997a). It is to be hoped that the finding of a male may shed more light on the familial association of this peculiar species.

The large lateral tubercles, with their complex setation, on the femur and first two coxae are also previously unknown; their function is unclear.

Family **Phoxichilidiidae** Sars, 1891

Genus ***Anoplodactylus*** Wilson, 1878

Anoplodactylus amoybius sp. nov.

(Figs 3, 4)

Material. Holotype (NHM 2003.630), male, and 4 female paratypes (NHM 2003.631–634): off Gabon, 01°60'S 09°09.5'E, 44 m depth, sandy sediment (89% sand, 10% silt-clay). Other material: 1 female, off Gabon, 1°16'36"S, 08°50'14"E, 26.9 m depth, 98% sand; 1 male, off Equatorial Guinea, 4°02'13"N, 08°30'59"E, 62.4 m depth, 36% sand, 64% silt-clay.

Description. *Male.* Trunk (Fig. 3A, B) of typical *A. petiolatus* (Krøyer, 1844) morphology, glabrous, without segmentation; lateral processes separated by their own width, each with naked dorsodistal tubercle; anterior of cephalon overhanging proboscis base; ocular tubercle at anterior edge of cephalon, about three times as tall as wide, with four eyes, distally blunt; abdomen held vertically, fusiform, with two distal spines.

Chelifore (Fig. 3C) slender, sparsely setose; chela functional, fingers without teeth or spines, moveable finger as long as palm. Small bumps on anterior bases of

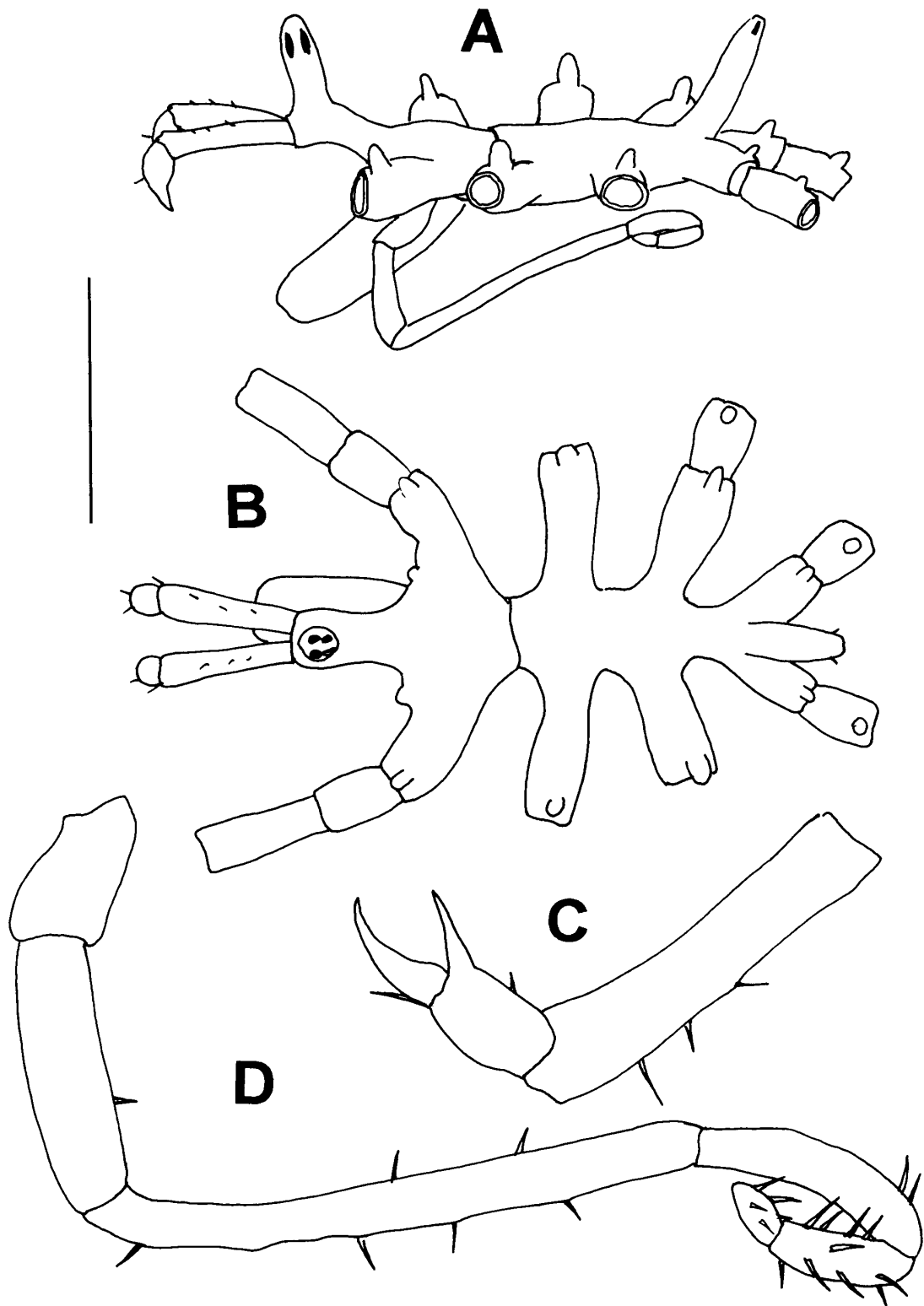


Fig. 3. *Anoplodactylus amoybius* sp. nov. A, lateral view of body; B, dorsal view of body; C, right chelifore; D, right oviger. A, B, D of holotype male, C of one paratype female. Scale line=0.6 mm for A and B, 0.25 mm for C and D.

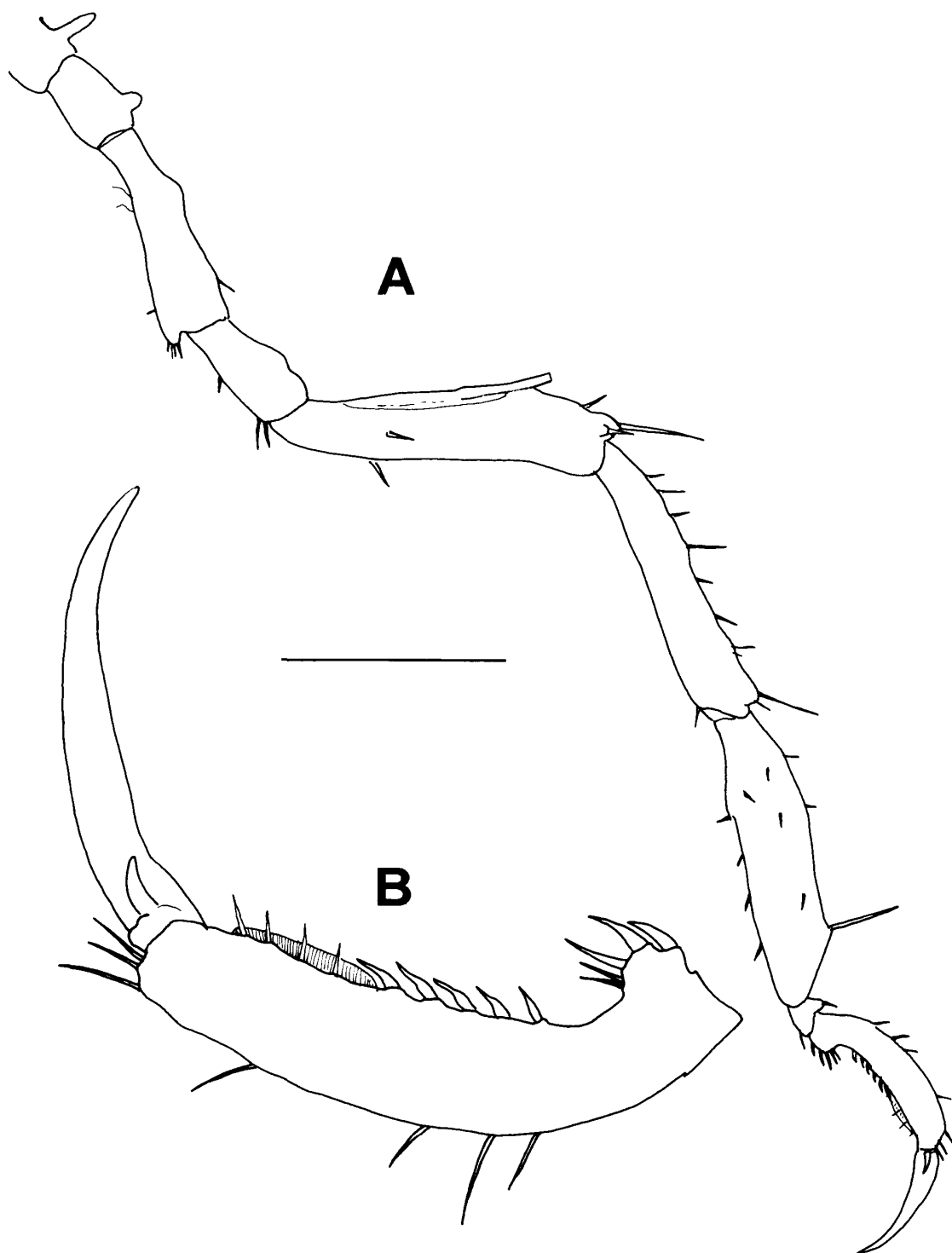


Fig. 4. *Anoplodactylus amoybius* sp. nov., holotype male. A, third right leg, posterior view; B, propodus and claws of same leg. Scale line=0.5 mm for A, 0.15 mm for B.

first lateral processes, described by some authors as “palp buds”. Proboscis cylindrical, not tapering.

Ovigerous leg (Fig. 3D) arising at inner end of first lateral process, with six articles; third article longest, more than twice as long as second; distal two articles with numerous fine spines pointing proximally.

Third leg (Fig. 4) with first coxa shortest among its articles, and bearing dorsodistal tubercle smaller than that on lateral process; second coxa more than twice as long as first, with dorsal swelling in proximal half and conspicuous ventrodorsal genital spur; third coxa 0.6 times as long as second, with middorsal swelling. Long leg articles subequal in length, femur longest, with large dorsodistal tubercle bearing spine; cement gland tube subcuticular from midpoint of dorsal surface of femur before rising from femur at three-quarters length; first and second tibiae sparsely spinose; tarsus small, triangular; propodus (Fig. 4B) curved, with distinct heel bearing two stout and three slender spines; sole with five sinuous spines, distal lamina paralleled by four slender setae, lamina extending for 36% of sole length (27% of propodus length). Main claw slender, arcuate, three-quarters as long as propodus; auxiliary claws small, lateral, 0.14 times as long as main claw.

Dorsodistal tubercle on first coxa present on second, third, and fourth legs only.

Female. Similar to male, without ovigers or cement glands; proboscis as in male, with no ventral processes.

Measurements (mm). Holotype: trunk length (anterior of cephalon to tip of fourth lateral process) 1.26, width across second lateral processes 0.94; proboscis length 0.48; abdomen length 0.31; chelifore length 0.39; oviger article 2 (O2) 0.27, O3 0.59, O4 0.22; third leg lengths—first coxa 0.18, second coxa 0.43, third coxa 0.25, femur 0.65, first tibia 0.59, second tibia 0.60, tarsus 0.044, propodus 0.36, lamina 0.1, main claw 0.28, auxiliary claw 0.038.

Etymology. From the Greek adjective “amoibaos”, meaning reciprocal, the new species being the Atlantic alternate to the Pacific *A. erectus*.

Remarks. The only described species of *Anoplodactylus* that has a subcuticular proximal extension of the cement-gland tube is *A. erectus*, which has been described in detail by Stock (1955) and Müller (1990); in that species the tube runs from a more proximal point at about one-third the length of the femur and rises from the surface at two-thirds the length. Other differences include the absence of a dorsodistal tubercle on the first coxae of any leg in *A. erectus*, the propodal lamina extending for only one-quarter the length of the sole in that species, and the ovigers arising from the middle of the first lateral processes. *Anoplodactylus erectus* is found along the Pacific coast of the Americas (from British Columbia to Chile), and from off Hawaii, Polynesia, Japan, Korea, and Hong Kong, from the shore to depths of 90 m (Bamber 1997b). *Anoplodactylus amoybius* may be considered to be its Atlantic counterpart.

The new species has superficial similarities to *Anoplodactylus petiolatus*, although, in addition to a differently configured cement-gland tube, that species does not have such a dorsodistal tubercle on the first coxa, contrary to the statement of Stock (1966); his record of “*A. petiolatus*” from off Congo may have been the present species.

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